



**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant: Tetsuya KAMIHARA  
Title: FUEL CELL SYSTEM  
Appl. No.: 10/553,945  
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371(c) Date: 10/21/2005  
Examiner: Eugenia Wang  
Art Unit: 1795  
Confirmation Number: 5799

**PRE-APPEAL BRIEF REQUEST FOR REVIEW**

Mail Stop AF  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

In accordance with the **Pre-Appeal Brief Conference Pilot Program**, announced July 11, 2005, this Pre-Appeal Brief Request is being filed together with a Notice of Appeal.

Claims 1 and 3-17 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. 2003/0003335 to Kazama et al. ("Kazama") in view of U.S. 2004/0001985 to Alva ("Alva"). Applicant respectfully traverses this rejection for at least the following reasons.

As an initial matter, applicant notes that the references applied in the rejection of the claims fail to disclose the control unit of claim 1, because the references fail to disclose the structure of the control unit. The control unit in claim 1 is "configured to" perform certain functions. Such configuration of the control unit is more than mere intended use, as suggested by the Patent Office on page 5 of the Office Action, but requires structure in the control unit to perform such functions as discussed below. In other words, the control unit must be programmed or otherwise configured to perform the recited functions.

The Federal Circuit has held that a general purpose computer programmed to carry out a claimed invention creates a new machine because the general purpose computer becomes a special purpose computer once it is programmed to perform particular functions. (*See WMS Gaming Inc. v. International Game*

*Technology*, 184 F.3d 1139, 1348, 51 USPQ2d 1385 (Fed. Cir. 1999) (“A general purpose computer, or microprocessor, programmed to carry out an algorithm creates ‘a new machine, because a general purpose computer in effect becomes a special purpose computer once is programmed to perform particular functions pursuant to instructions from program software’ citing *In re Alappat*, 33 F.3d 1526, 1545, 31 USPQ2d 1545, 1558 (Fed. Cir. 1994)) (“[I]f a machine is programmed in a certain new and unobvious way, it is physically different from the machine without the program; its memory elements are differently arranged.” citing *In re Bernhart*, 57 C.C.P.A. 737, 417 F.2d 1395, 1399-1400, 163 USPQ 611, 615-16 (CCPA 1969))(emphasis added))).

Applicant respectfully submits that these cases demonstrate that a device, such as a control unit or computer, that is programmed or otherwise configured to perform a function as a special purpose computer or machine is not only different from a general purpose computer or machine, but that the configuration or programming of a special purpose computer or machine to perform a function provides structure that is not present in a general purpose computer or machine that lacks the same configuration or programming of the special purpose computer or machine. Therefore, such a general purpose computer or machine does not anticipate such a special purpose computer or machine because the general purpose computer or machine does not contain all of the structural features of the special purpose computer or machine.

Furthermore, the court of *In re Prater*, which was also cited by the Federal Circuit in *In re Alappat*, considered arguments that a general purpose computer could be programmed to practice a claimed device, such as a special purpose computer. See 415 F.2d 1393, 1405 (C.C.P.A. 1969). The court suggested that such an analysis may be rooted in hindsight because it assumes the existence in the prior art of an applicant’s discovery, not just the existence of a general purpose computer in the prior art and the ability to program it. Instead, the court noted that a proper obviousness determination under 35 U.S.C. § 103 requires an analysis of the prior art at the time that the invention was made. *Id.* at 1406. The court further stated that even if general purpose computers and typical programming techniques existed at the time of an invention, an applicant’s invention is still not obvious under 35 U.S.C. § 103 if one of ordinary skill in the art did not have the knowledge of applicant’s discovery because one of ordinary skill in the art would not have known what to program such a general purpose computer to do. *Id.*

Applicant respectfully submits that *In re Prater* demonstrates that it would not have been obvious to modify a prior art general purpose machine or computer to perform the function of a claimed special purpose machine, computer or control unit without a teaching or suggestion in the prior art of Applicant’s invention that supports such a modification of a known general purpose machine, computer or control unit.

In view of this controlling legal authority, Applicant respectfully submits that a special purpose machine, computer or control unit that is programmed or otherwise configured to perform a function is not anticipated by a general purpose machine or computer that lacks the same configuration or programming, and

that it would not have been obvious to modify such a general purpose machine or computer to have the configuration or programming of a claimed special purpose machine, computer or control unit, absent a teaching or suggestion in the prior art to do so.

In the present case, the references applied in the rejection of the claims do not disclose a controller configured or programmed to perform all the functions performed by the control unit of claim 1. Moreover, the Patent Office has provided no evidence that the functions that the control unit of claim 1 is configured to perform would have been obvious in view of the applied references. Thus, the references applied fail to disclose the structure of the control unit as recited, and such a structure would not have been obvious in view of the applied references.

The Patent Office states on pages 11-12 of the Office Action:

It is first submitted that “programmed to” and “configured to” are not synonymous, as being configured can relate to the structure of the computer/controller as it is connected to its peripheral extensions. Thus, the language “configured to” is broader than Applicant’s applied interpretation. Accordingly, the combination as set forth in the rejection above is seen to be “configured” in the same manner (as combination renders obvious the use of a controller connected to the necessary peripheral extensions). There is nothing in the claim language to preclude such an interpretation, and thus the actions performed are interpreted to be functional.

Applicants note that claim 1 requires that the control unit itself be configured to perform recited functions, and thus the control unit itself must have a structure to perform such functions. The Federal Circuit in *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998) indicates that the phrase “configured to” requires structure. In *State Street*, the Federal Circuit interpreted a claim under § 112, 6 as follows:

When independent claim 1 is properly construed in accordance with § 112, 6, it is directed to a machine, as demonstrated below, where representative claim 1 is set forth the subject matter in brackets stating the structure the written description discloses as corresponding to the respective “means” recited in the claims.

1. A data processing system . . . comprising: . . .

(c) first means [an arithmetic logic circuit configured to prepare the data disk to magnetically store selected data] for initializing the storage medium;

(d) second means [an arithmetic logic circuit configured to retrieve information from a specific file, calculate incremental increases or decreases based on specific input, allocate the results on a percentage basis, and store the output in a separate file] for decreasing . . .  
(**emphasis added**).

Thus, the Federal Circuit in *State Street*, in interpreting claim limitations, indicated that “configured to” requires structure.

The Board of Patent Appeals and Interferences in *Ex parte Schneider* 2009 WL 191989 (Bd. Pat. App. & Inter. 2009) has also found that the functional limitations of a controller “configured to” perform functions must be considered when interpreting an apparatus claim. In *Ex parte Schneider*, claim 1 at issue recited in part “a controller configured to” perform certain functions. In interpreting the claim language of a controller “configured to” perform certain functions, the Board noted that claimants may define claim elements using functional or structure language. *Id.* at \*5 (citing *In re Swinehart*, 439 F.2d 210, 213 (CCPA 1971)).

Moreover, even under the Patent Office’s broad interpretation of “configured to,” the references applied in the rejection of the claims do not disclose a controller configured or programmed to perform all the functions performed by the control unit of claim 1. That is, even if “configured” relates to the structure of the controller as it is connected to its peripheral extensions, the controller still must have the structure of actually being connected to any such extensions to allow it to perform the recited functions. The references applied in the rejection do not disclose a controller with such structure, whether the structure is entirely within the controller itself, or based on actual connections of the controller.

Still further, functional limitations in an apparatus claim can impart structural features in the claim. For example MPEP 2173.05(g) states in part:

In *Innova/Pure Water Inc. v. Safari Water Filtration Sys. Inc.*, 381 F.3d 1111, 1117-20, 72 USPQ2d 1001, 1006-08 (Fed. Cir. 2004), the court noted that the claim term “operatively connected” is “a general descriptive claim term frequently used in patent drafting to reflect a functional relationship between claimed components,” that is, the term “means **the claimed components must be connected in a way to perform a designated function.**” “In the absence of modifiers, general descriptive terms are typically construed as having their full meaning.” *Id.* at 1118, 72 USPQ2d at 1006. In the patent claim at issue, “subject to any clear and unmistakable disavowal of claim scope, the term ‘operatively connected’ takes the full breath of its ordinary meaning, i.e., ‘said tube [is] operatively connected to said cap’ when the tube and cap are arranged in a manner capable of performing the function of filtering.” *Id.* at 1120, 72 USPQ2d at 1008., and

In a claim that was directed to a kit of component parts capable of being assembled, the Court held that limitations such as “members adapted to be positioned” and “portions . . . being resiliently dilatable whereby said housing may be slidably positioned” serve to precisely **define present structural attributes of interrelated component parts of the claimed assembly.** *In re Venezia*, 530 F.2d 956, 189 USPQ 149 (CCPA 1976). (**emphasis added**)

In the present case, the control unit of claim 1 must have structural features to perform its recited function.

Kazama and Alva fail to disclose or suggest at least the feature of independent claim 1 where the control unit is configured to “control the electric power or electric current extracted from the fuel cell stack in accordance with the coolant temperature detected by the inlet temperature detecting unit” and “to set a limit value of the electric power or electric current extracted from the fuel cell stack in such a manner that the higher said coolant temperature becomes, the lower said limit value is set.”

Kazama discloses detecting the coolant temperature of a fuel stack (paragraph 0088). The maximum possible power generation of the fuel cell stack is then computed based on the detected fuel coolant temperature (paragraph 0089), where the maximum possible power generation amount is obtained based on the relation between the coolant temperature (fuel cell temperature) from the fuel cell stack and the maximum possible power generation amount shown in FIG. 13. Kazama further discloses that when an outputable power is larger than a margin load power, a control unit controls the power generation amount of a fuel stack such that the charged power becomes equal to an electric power difference between the margin load power and an outputtable power (abstract).

Kazama, however, does not disclose a control unit configured to either "control the electric power or electric current extracted from the fuel cell stack in accordance with the coolant temperature detected by the inlet temperature detecting unit" or "to set a limit value of the electric power or electric current extracted from the fuel cell stack in such a manner that the higher said coolant temperature becomes, the lower said limit value is set." The Patent Office on page 3 of the Office Action recognizes that Kazama does not disclose the temperature sensor on the inlet side, but cites Alva for curing the deficiencies of Kazama.

Applicant submits that Alva fails to cure the deficiencies of Kazama. Alva discloses a fuel cell cooling system, and that various measured parameters such as pressure, flow rate, and temperature at the inlet and outlet of the cell may be measured and the parameters used for controlling the operations of the components of the cell (paragraph 34). Even if Kazama were modified to include an inlet coolant temperature sensor, however, Alva makes no suggestion that the Kazama control should be modified "to set a limit value of the electric power or electric current extracted from the fuel cell stack in such a manner that the higher said coolant temperature becomes, the lower said limit value is set" as recited in claim 1. Thus, even if Kazama and Alva were combined, the combination would not have all of the features of independent claim 1.

The dependent claims are patentable for at least the same reasons as independent claim 1, from which they depend either directly or indirectly, as well as for further patentable features recited therein.

Respectfully submitted,

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